

PHYSICS 425 NOTES: PLASMA ASTROPHYSICS

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Note to students: The goal of this course is to explore the “physics of astrophysics”. What physics governs the behavior of the astrophysical objects we observe? How can we interpret our observations, in light of the relevant physics, to understand what’s going on inside a particular star, nebula or galaxy? To reach this goal we need to bring together a diverse range of physics – some of which you will have seen in other courses, some of which will be new. These ideas cover a broad range of material, not all of which is in a single textbook. Thus, we’ve got the course notes for our text.

You should note *units and dimensions*. These notes are in cgs, as is most of the astrophysical literature. That makes very little difference for “rocks” (analyses that involve mass, length, time); but it makes a big difference for electrodynamics. The \mathbf{E} and \mathbf{B} fields, as well as the fundamental charge, have different dimensions in cgs than in SI; and the coupling constants in Maxwell’s equations are different.

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